

REMARKS

The rejection of Claim 6 is rendered moot by its present cancellation. Newly added Claim 9 is directed to the relevant embodiment.

The presently claimed process for the continuous preparation of thermoplastic polyurethane elastomers entails as a first step the premixing of the recited reactants. In carrying out this step, in the course of a period of, at most, 5 seconds, the polyisocyanate (reactant A) and the isocyanate-reactive compounds (reactants B1 and B2) are kept, before entering the reactor, at temperatures that differ one from the other by less than 20°C (herein "Temperature Difference"). The experimental section of the application demonstrates the criticality of these parameters. In the working examples, 1, 2 and 5, the premixing step was carried out in a static mixer and the mixture was then introduced to a reaction tube that is equipped with mixing elements/extruder. In Examples 7-10, the premixing was carried out at the first portion of the extruder and the reaction conducted in subsequent parts thereof.

The data included in the specification enables calculating the relevant mixing periods. Accordingly, the mixing periods in Examples 1 and 2 were 0.98 second; in Example 5 the period was 0.88 second. In Examples 7-10, each of the mixing periods was about 3 seconds. These periods and the substantial identity of temperatures of the mixing components are critical to the inventive process as is demonstrated in the experimental section of the application. The advantages attributed to the inventive process relate to the recrystallization temperature, and melt flow indices (compare Examples 1, 2 and Comparative Example 3, as well as Examples 5 and 6) of the resulting elastomeric composition. Additional advantages refer to the 100% modulus and to the presence/absence of specks and structure of the film prepared of the elastomer (compare Examples 7-10).

The claims stand rejected under 35 U.S.C. 103(a) said to be unpatentable over Kirchmeyer et al (U.S. Patent 5,739,252) or Ulrich et al (U.S. Patent 3,963,679) each in view of Rausch et al (U.S. Patent 3,642,964).

Kirchmeyer disclosed (column 6, lines 31-33) the mixing of relevant reactants at temperatures of 50 to 250°C for up to 5 seconds under conditions that no reaction

occurs, followed by reacting in a static mixer. There is nothing in the document relative to the criticality of the Temperature Difference. Rausch disclosed (column 7, lines 35-39) that the advantageous residence times in the mix zone are 6 to 50 seconds, preferably 12 to 30 seconds. Clearly, the combination of Kirchmeyer and Rausch does not amount to a description of the present invention. Rausch's disclosure of reactants maintained in their molten state (column 5, lines 60-62), cannot be taken as directing the practitioner to the present requirement relative to the Temperature Difference. Nor may Rausch's examples, where use is made of reactants that are kept at the same temperature, be taken as disclosing the presently required Temperature Difference.


Ulrich disclosed a relevant process whereby the reactants are mixed in a first zone and the resulting mixture is subjected to high-shear mixing. There is nothing in the document relative to the mixing period that characterizes the present process. Nor is there any disclosure relative to the Temperature Difference. Rausch has been discussed above. The combined disclosures fall short of describing or suggesting the presently claimed process.

The rejections under Section 103 are believed to be untenable and their retraction in light of the above is requested.

Believing the above represents a complete response to the Office Action and that the application is in condition for allowance, Applicants request the earliest issuance of an indication to this effect.

Respectfully submitted,

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